

Electronic Waste & Recycling

Provided by Youth Environmental Program,
part of the West Virginia Department of Environmental Protection

Objective

To teach students what electronic waste is; how it can impact the environment; and practices to reduce the amount of electronics entering the waste stream.

Grade Level	3-5
Duration	35-45 minutes
Group Size	Any
Setting	Indoor or Outdoor

Vocabulary

E-waste, Recycling, Pollution, Landfill, Natural Resources

Materials

- Photos of electronic equipment that we use and sometimes throw away when we no longer need them, or they don't work. The photos can include TVs, cell phones, laptops, video game components, computer keyboards, etc.
- Photos of traditional recyclables, such as plastic water bottles, plastic soda bottles, glass bottles, newspapers, magazines, cardboard, aluminum cans etc.
- Dry-erase board/classroom board

Introduction

Opening questions:

- Does anyone know where our waste/trash goes once it is picked up at our homes and at school? Explain that most of it goes to a **landfill**, or dump, where it is buried.
- Do you know what recycling means? Explain that **recycling** involves making something new from an item instead of throwing it in the trash.

Tell the group: Today, we will talk about the benefits of recycling. It saves space in landfills; reduces pollution; and it saves energy and **natural resources**, such as water, timber, coal, and natural gas.

Warm-up

Step 1

Ask students to list different types of electronics they use at school and at home. Discuss why it is important to recycle or reuse our electronic equipment. Explain that electronic waste that ends up in landfills not only takes up space, but can release **pollution**, or toxins, into the environment that can be harmful to humans and animals. In the United States, 70 percent of heavy metals, like lead and mercury, that are found in landfills comes from discarded electronics.

Step 2

Share the following information:

- **Electronic Waste (E-Waste)** describes discarded computers, office electronic equipment, mobile phones, televisions, laptops, computer keyboards, answering machines, video game consoles, stereos, etc.
- An estimated 20 to 50 million tons of E-Waste are disposed of worldwide every year. E-Waste is the fastest-growing municipal waste stream in the U.S., where we throw away close to three million tons per year
- The U.S. Environmental Protection Agency estimates that only 15 to 20 percent of E-Waste is recycled, the rest goes into landfills or incinerators.

Activity

Step 1

Start by explaining to students that they are tasked with separating E-Waste from a collection of recyclables.

Step 2

Alternate between holding up photos of conventional recycling items such as plastic bottles and cardboard, with E-Waste items. Have students raise their hands to answer whether the photo is E-Waste or another recyclable. If you have enough photos, have each student take a turn.

You can ask the student to describe the type of electronic equipment that is in the photo, whether they own one or something similar, and if they have thrown an electronic item into the trash recently.

Step 3

Ask students if they have ever recycled E-Waste. If so, what was it and where did they take it? Then, ask the students if they know what materials can be recovered by recycling E-Waste (Cell phones contain copper, silver and gold, for example, 80 percent of materials found in cell phones can be recycled or reused.)

Share the fact that Americans throw away an estimated \$55 billion in E-Waste material annually.

Closing

- Ask the students what they can do to reduce the amount of E-Waste entering the waste stream. Write down their answers for the class.

Examples: Avoid buying a new cell phone every year. Fix old computers, phones, and gadgets instead of throwing them away. Donate your electronic device to another family member, friend, or charity. Seek out electronics recyclers in the community, including retail stores like Home Depot, Lowe's, and Best Buy.

Additional Information

E-Waste in Asia: Today, there is a growing concern that developing countries such as China and India are becoming dumping grounds for the world's E-Waste. In many cases, lower environmental and labor standards exist in parts of Asia and E-Waste is processed through illegal, pollution-generating activities. Workers, including children, are unaware of the damage being done to their bodies and environment.

E-Waste in West Virginia: In the U.S., 19 states ban the dumping of E-Waste into landfills. In 2011, West Virginia passed a law prohibiting the disposal of electronics in landfills but the law was reversed in 2016.

Additional Resources

E-Waste YouTube videos:

Peekaboo Kidz | Dr. Binocs Show | What Causes E-Waste?

Linh Sao Nguyen | E-Waste: Why We Need to Act Now

SimsRecyclingGlobal | How Computers and Electronics Are Recycled

Total Green Recycling | What does the process of recycling e-waste look like

Insider Business | How 6 Million Pounds of E-Waste Gets Recycled

Interesting Engineering | How E-Waste is Harming Our World

NowThis Earth | How to Recycle Your Old Electronics

E-Waste Literature:

US EPA Sustainable Management of Electronics | <https://www.epa.gov/smm-electronics>

US EPA Cleaning Up Electronic Waste | <https://www.epa.gov/international-cooperation/cleaning-electronic-waste-e-waste>

Electronic Waste Facts for Kids | https://kids.kiddle.co/Electronic_waste

Electronics Recycling Resources | <http://www.electronicstakeback.com/how-to-recycle-electronics/resources-for-kids/>

Kanawha County Recycling Authority | <https://kanawharecycles.org/Materials/Electronics/Default.aspx>



Learn more about the West Virginia Department of Environmental Protection's Youth Environmental Program or to schedule a presentation visit our website: <https://dep.wv.gov/environmental-advocate/YEP/Pages/default.aspx>